

WHAT IS CLAIMED IS:

1. A back panel structure of liquid crystal on silicon (LCOS) comprising  
a substrate having a cell region and a routing/pad region, wherein the cell region is  
arranged with a plurality of pixels, and the routing/pad region is arranged with a  
5 patterned trace and a plurality of routing/pads, and the routings/pads are electrically  
bonded to the pixels by means of the patterned trace;  
an alignment layer, disposed over the substrate; and  
a break protective layer, arranged on the alignment layer over the routing/pad region.
- 10 2. The backpanel structure of claim 1, wherein the substrate is a silicon substrate.
3. The backpanel structure of claim 1, wherein the break protective layer is a  
photoresist.
- 15 4. The backpanel structure of claim 1, wherein the break protective layer is a  
dielectric layer.
5. A backpanel structure of liquid crystal on silicon (LCOS), comprising  
a substrate, having a cell region and a mounting/pad region;  
20 an alignment layer, disposed over the substrate; and  
a break protective layer, arranged on the alignment layer over the routing/pad region.
6. The backpanel structure of claim 5, wherein the substrate is a silicon substrate.

7. The backpanel structure of claim 5, wherein the cell region of the substrate is arranged with a plurality of pixels.

8. The backpanel structure of claim 5, wherein the routing/pad region is arranged  
5 with a patterned trace and a plurality of routing/pads and the routing/pads are electrically bonded to the pixels through the patterned trace.

9. The backpanel structure of claim 5, wherein the break protective layer is arranged  
10 on the patterned trace of the routing/pad region.

10. The backpanel structure of claim 5, wherein the break protective layer is a photoresist.

11. The backpanel structure of claim 5, wherein the break protective layer is a  
15 dielectric layer.

12. A liquid crystal on silicon (LCOS) cell structure, comprising;  
a silicon back panel having a cell region and a routing/pad region, wherein the routing/pad region is arranged with a break protective layer;  
20 an alignment layer disposed over the silicon back panel;  
a transparent substrate being mounted on the top of the cell region to expose the routing/pad region;  
a sealant material mounted between the silicon backpanel and the transparent substrate; and

a liquid crystal layer arranged at the space formed by the silicon backpanel, the transparent substrate and the sealant material.

13. The LCOS cell structure of claim 12, wherein the cell region is arranged with a  
5 plurality of pixels and an alignment layer.

14 The LCOS cell structure of claim 12, wherein the routing/pad region is arranged  
with a patterned trace and a plurality of routings/pads, and the routings/pads are  
electrically bonded to the pixels by means of the patterned trace.

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15. The LCOS cell structure of claim 12, wherein the break protective layer is  
arranged on the patterned trace of the routing/pad region.

16. The LCOS cell structure of claim 12, wherein the break protective layer is a  
15 photoresist.

17. The LCOS cell structure of claim 12, wherein the break protective layer is a  
dielectric.